



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/560,244	12/12/2005	Toshiaki Kashihara	Q91286	4994
23373	7590	10/08/2008	EXAMINER	
SUGHRUE MION, PLLC			TAMAI, KARL I	
2100 PENNSYLVANIA AVENUE, N.W.				
SUITE 800			ART UNIT	PAPER NUMBER
WASHINGTON, DC 20037			2834	
			MAIL DATE	DELIVERY MODE
			10/08/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/560,244	KASHIHARA ET AL.	
	Examiner	Art Unit	
	KARL I.E. TAMAI	2834	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 18 June 2008.
 2a) This action is **FINAL**. 2b) This action is non-final.
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 1-14 is/are pending in the application.
 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
 5) Claim(s) _____ is/are allowed.
 6) Claim(s) 1-14 is/are rejected.
 7) Claim(s) _____ is/are objected to.
 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.
 10) The drawing(s) filed on 05 December 2005 is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413)
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	Paper No(s)/Mail Date. _____ .
3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)	5) <input type="checkbox"/> Notice of Informal Patent Application
Paper No(s)/Mail Date _____.	6) <input type="checkbox"/> Other: _____ .

DETAILED ACTION

Specification

1. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: **slot-in portion is smaller than a cross-section of the cross-over portion** (see claim 9), the ends of the coil element connect the coil element of the slot-in portion in the plurality of slots with distances between the adjacent, parallel ends of the at least one coil element in the cross over portion being different (claim 11), and the gap between insulation coating of each adjacent element of the conductor (claim 12).

Drawings

2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the conductor wherein the **slot-in portion is smaller than a cross-section of the cross-over portion** must be shown or the feature canceled from the claim 9; the ends of the coil element connect the coil element of the slot-in portion in the plurality of slots with distances between the adjacent, parallel ends of the at least one coil element in the cross over portion being different must be shown or the features cancelled from claim 11; and the gap between insulation coating of each adjacent element of the conductor must be shown or the feature cancelled from claim 12. No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended

replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

3. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: ends of the coil elements, the gap between the insulating coating.

4. The objection to the title is withdrawn.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

6. Claims 9, 11 and 12 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention. Claim 9 recites the limitation of the "slot-in portion is smaller than a cross-section of the cross-over portion". Claim 11 recites the limitation of the "the ends of the coil element connect the coil element of the slot-in portion in the plurality of slots with distances between the adjacent, parallel ends of the at least one coil element in the cross over portion being different". Claim 12 recites "the gap between insulation coating of each adjacent element of the conductor". There is insufficient written support for these limitations in the claims.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claims 1, 3, 4, and 7 are rejected under 35 U.S.C. 102(b) as being anticipated by Fujita et al. (Fujita)(US 2002/0043886) and Oohashi et al. (Oohashi)(US 2003/0015932). Fujita teaches a generator for a vehicle having a rotor 6 with a field windings 15, a stator including a stator core 17 arranged opposed to the rotor and an electrical conductor wound 18 on the stator core, and a housing 3 supporting the rotor and the stator. Fujita teaches the stator core 17 is constituted by core having a plurality of slots (see figure 3) each extending to an axial direction, the electrical conductor is comprised of a rectangular slot-in portion 18a located in the slots and a circular cross-over portion 18b connecting each of the slot-in portions at the shaft end side of the stator, wherein the conductor 18 is formed so that of-the slot-in portion 18a located in the slots is molded to substantially rectangular (in the press dies 102a, 102b of figure 14) in its cross-sectional profile before it is entered in the slots and the conductor of the cross-over portion 18b is substantially circular in its cross-sectional profile. Fujita teaches longer side portion of the conductor (radial side) of the slot-in portion located in the slots has an insulation coating of which thickness is smaller than that of insulation coating in the cross-over portion due to the insulating resin coating of embodiment 9 (figure 12). Fujita teaches every aspect of the invention except it does not teach the core being laminated. Oohashi teaches the core 11 being laminated for easy insertion of the winding 60 (paragraphs 0035-0036) with a rectangular cross section at the in slot portions 16 and circular cross over portions 17. Oohashi (embodiment 7) teaches the rectangular portions are molded by pressing in a jig, the insulation is compressed to be thinner than the round end sections (shown in figures 23A and 23B). It would have

been obvious to a person of ordinary skill in the art at the time of the invention to construct the alternator of Fujita with the stator core being laminated to provide easy assembly with a superior rate of production, as taught by Oohashi.

Claim 3: Fujita et al. discloses a stator and conductor as in claim 1 above and further discloses that the cross-sectional shape of the slot-in portion of the conductor is rectangular and the long sides are placed in the radial direction of the stator core (see figure 9).

Claim 4: Fujita et al. discloses a stator and conductor as in claim 1 above and further discloses that the slot-in portion is disposed on a line in the radial direction (Fig. 3).

Claim 7: Fujita et al. discloses a stator and conductor as in claim 1 above and further discloses that the crossover portion is shielded by a case comprising of aluminum frames (Fig. 1 and [0103]). This is equivalent to the metallic housing as claimed in the instant application.

Claim 9: In regards to claim 9, Fujita suggest the in slot portion is smaller than the cross over portion of embodiment 11 to reduce costs of production, because the press portion would be smaller than the non-pressed portion. Additionally, Oohashi teaches the non-flat cross over portions may be larger in cross sectional area than the in slot portions (embodiment 5, figure 12) to suppress heat generation. It would have been obvious to a person of ordinary skill in the art at the time of the invention to construct the alternator of Fujita and Oohashi with the cross sectional area of the in slot portion being smaller than the cross section of the cross over portion to provide a

reduced cost of manufacturing, as suggested by Fujita, and to suppress heat generation as taught by Oohashi.

9. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fujita Fujita et al. (Fujita)(US 2002/0043886) and Oohashi et al.(Oohashi)(US 2003/0015932), in further in view of Umeda et al. (Umeda)(US 5936326). Fujita and Oohashi teach every aspect of the invention except the rectangular conductor with the longer side being placed in the circumferential direction. Umeda et al. does teach a rectangular conductor being in the radial direction of the stator core and the longer side is in placed in the circumferential direction (Fig. 11). It would be obvious for a person having ordinary skill in the art at the time of the invention to construct the generator of Fujita and Oohashi with the rectangular conductor with the longer side being placed in the circumferential direction because Umeda teaches that more conductors can be inserted in the stator slots to provide a small sized high power alternator.

10. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fujita et al. (Fujita)(US 2002/0043886) and Oohashi et al. (Oohashi)(US 2003/0015932), in further in view of Asao et al. (Asao)(US 6281612). Fujita and Oohashi teach every aspect of the invention except the conductor of the slot in portion located in slots closely disposed on a plurality of lines in the radial direction. Asao teaches the conductor of the slot in portion located in slots closely disposed on a plurality of lines in the radial direction to provide a slot factor in the slot (Fig. 11). Asao teaches the slot in portion

impregnated with resin to provide an integral structure with the core (col. 7, line 4). It would be obvious for a person having ordinary skill in the art at the time of the invention to construct the generator of Fujita and Oohashi with the conductor of the slot in portion located in slots closely disposed on a plurality of lines in the radial direction to provide a slot factor in the slot, as taught by Asao.

11. Claim 6 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fujita et al. (Fujita)(US 2002/0043886) and Oohashi et al. (Oohashi)(US 2003/0015932), in further in view of Oohashi et al.(Oohashi '958)(20020096958).

Fujita and Oohashi teach every aspect of the invention, as discussed above, except the conductor of the in-slot portion impregnated with resin. Oohashi ('958) teaches the resin is applied to both the cross over portions and in side the slots (paragraphs 0023-0024) to reduce noise and vibration in the stator (paragraph 0003). Oohashi teaches resin in the slots and the cross over section. It would be obvious for a person having ordinary skill in the art at the time of the invention to construct the generator of Fujita and Oohashi with the conductor of the in-slot portion impregnated with resin to reduce vibration and noise in the stator.

12. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fujita et al. (Fujita)(US 2002/0043886) and Oohashi et al. (Oohashi)(US 2003/0015932), in further in view of Ohashi et al.(Ohashi)(US 6018205). Fujita and Oohashi teach every aspect of the invention, as discussed above, except the periphery of the housing having

ribs and air discharge holes. Ohashi teaches ribs 28 and exhaust holes 29 to provide cooling and improved power generation (col. 2, lines 60-65). It would be obvious for a person having ordinary skill in the art at the time of the invention to construct the generator of Fujita and Oohashi with the periphery of the housing having ribs and air discharge holes to provide cooling and enhanced power generation.

13. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fujita et al. (Fujita)(US 2002/0043886) and Oohashi et al. (Oohashi)(US 2003/0015932), in further in view of Oohashi et al. (Oohashi '076)(EP 1294076). Fujita and Oohashi teach every aspect of the invention, as discussed above, except the ends of the coil element connect the coil element of the slot-in portion in the plurality of slots with distances between the adjacent, parallel ends of the at least one coil element in the cross over portion being different. Oohashi 076 suggests in figure 6 that the coil elements 47b are parallel and different lengths to accommodate the different lengths between the slots at different radial locations. It would be obvious for a person having ordinary skill in the art at the time of the invention to construct the generator of Fujita and Oohashi with the ends of the coil element connect the coil element of the slot-in portion in the plurality of slots with distances between the adjacent, parallel ends of the at least one coil element in the cross over portion being different to accommodate different lengths between the stator slots in the radial direction, as shown in Oohashi.

14. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fujita et al. (Fujita)(US 2002/0043886) and Oohashi et al. (Oohashi)(US 2003/0015932), in further in view of Kusase et al. (Kusase)(US 6147432). Fujita and Oohashi teach every aspect of the invention, as discussed above, except a gap between the insulating coating of each adjacent element of the conductor. Kusase teaches a gap (see figure 4) between the insulating coating of each adjacent element of the conductor to provide cooling flow in the radial direction (col. 1, line 30-33). It would be obvious for a person having ordinary skill in the art at the time of the invention to construct the generator of Fujita and Oohashi with a gap between the insulating coating of each adjacent element of the conductor to provide cooling and vibration reduction as taught by Kusase.

15. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fujita et al. (Fujita)(US 2002/0043886) and Oohashi et al. (Oohashi)(US 2003/0015932). Fujita and Oohashi teach every aspect of the invention, as discussed above, except the cross over portion having a diameter of 1.6mm and the in-slot portion has a thickness of 1.3 mm. Fujita teaches the diameter of the cross over section and the thickness of the rectangular section are result effective variables in determining the circular and rectangular cross sections providing inexpensive conductors (paragraph 0150). It would be obvious for a person having ordinary skill in the art at the time of the invention to construct the generator of Fujita and Oohashi with the cross over portion having a diameter of 1.6mm and the in-slot portion has a thickness of 1.3 mm to optimized the expense of the generator with the current carry capacity of the generator, as suggested

by Fujita, and because it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. (see *In re Bosch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

16. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fujita et al. (Fujita)(US 2002/0043886) and Oohashi et al. (Oohashi)(US 2003/0015932), in further in view of Yumiyama et al. (Yumiyama)(US 5587619). Fujita and Oohashi teach every aspect of the invention, as discussed above, except the thickness of the insulating coating on the cross over portion is 50 um and the thickness of the slot in portion is 40 um. Yumiyama teaches the thickness of the insulation is result effective to provide a high space factor in the slot with decreased magnetic resistance in the magnetic core (col. 2, line 49-62). Yumiyama teaches the thickness of the insulating coating in the um range (48 um on the rounded surface and 30 on the flat surfaces). It would be obvious for a person having ordinary skill in the art at the time of the invention to construct the generator of Fujita and Oohashi the thickness of the insulating coating on the cross over portion is 50 um and the thickness of the slot in portion is 40 um, because Yumiyama teaches the thickness of the insulating coating on the coated is flatten to provide a high space factor with the magnetic resistance in the core decreased for a small motor with high output; and because it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. (see *In re Bosch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Response to Arguments

17. Applicant's arguments filed 06/18/2008 have been fully considered but they are not persuasive. Applicant's argument that the regarding figure 4 is not persuasive because it does not show the cross sections of the in-slot or cross over sections of the winding. Applicant's argument regarding the published application paragraph 26 is not persuasive because it does not disclose the cross sections of the in-slot or cross over sections of the winding. Applicant's argument regarding the antecedent basis for ends of the coil element is not persuasive. The "coil end portion" 44b is not at issue, the specification does not provide antecedent basis is not provided for the "ends of the at least one coil element". Applicant's arguments regarding the distances of figure 2 is not clear because no dimensions are disclosed for figure 2.

Conclusion

18. Applicant's amendment necessitated the new grounds of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

19. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Karl I.E. Tamai whose telephone number is (571) 272 - 2036.

The examiner can be normally contacted on Monday through Friday from 8:00 am to 4:00 pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mrs. Quyen Leung, can be reached at (571) 272 - 8188. The facsimile number for the Group is (571) 273 - 8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Karl I Tamai/
PRIMARY PATENT EXAMINER
October 9, 2008